

# Commentary on: Observations on the Tear Trough

Oren Tepper, MD

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## Commentary

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I commend the authors for their noteworthy contribution to our literature, titled “Observations on the Tear Trough,”<sup>1</sup> which tackles an important and challenging area in facial aesthetic surgery. The tear trough, also commonly referred to as the nasojugal fold, is traditionally described as a deformity resulting from aging and the loss of ligamentous support at the lower eyelid-cheek junction. Through careful photographic analysis of “ideal” patients, and retrospective analysis of patients who underwent a variety of procedures to address the tear trough, the authors make a case for the novel concept of a “clinical tear trough,” defined as a virtual topographical structure.

In the initial part of their study, the authors set out to better define the aesthetic ideals of the tear trough. To do so, they randomly gathered photographs from 2 different groups that they considered to be ideal; model headshots (10 males, 10 females) and patients aged 16-30 years who had not undergone facial or periorbital aesthetic procedures (10 males, 10 females). Key findings in their analysis of the “ideal” cohorts included a nasojugal fold that was significantly less prominent in female models, and a significantly smaller marginal-reflex distance-2 (MRD-2) in male models. Lower eyelid length did not significantly differ among any of their ideal groups. One particularly thought-provoking discovery was that all of their ideal photos demonstrated some level of medial lid-cheek demarcation. As noted by the authors, this raises the important question of whether we need to readjust our perception of an optimal tear-trough, moving away from the goal of achieving an eyelid-cheek junction with absolutely no demarcation.

Although the authors’ photographic analysis of ideals does offer some interesting findings, the strength of their

data is somewhat limited. When discussing or suggesting beauty norms across a population, 20 headshots comprises an extremely small data set. Furthermore, the authors do not provide the ages of the models, thus leaving the reader to assume that they are relatively young and similar in age. Likewise, no clinical information is offered about the 20 ideal patients who were also studied, other than that they had not undergone periorbital cosmetic procedures. There are a number of potential confounding variables that may have affected this group; did this perhaps represent an atypical group of patients with elevated body mass index (ie, seeking body contouring), or perhaps a group with a relatively low body mass index? These factors would undoubtedly affect facial volume, and thus the appearance of the lid-cheek junction. Although the authors do report the ages of this group, I believe the range of 16-30 years old is too wide to draw any meaningful conclusions.

Despite my concerns regarding the authors’ photographic analysis of ideals, their findings in the second part of their study are quite profound and provocative. In this portion of their study, the authors performed a 4-year retrospective review of surgical patients who underwent one

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of the following procedures: fat excision (n = 15); fat transposition (n = 15); laser resurfacing (n = 10); or endoscopic midface lift (n = 10). Of great interest was their finding that all procedures led to effacement of the nasojugal fold, with fat transposition being the technique that led to the most significant change. In contrast, fat transposition was the only procedure to show no effect on lower lid length. Seemingly discordant findings such as this force us to take pause and consider what in fact is our operative goal when it comes to the tear-trough. Indeed, the authors did reflect on their findings and report a modified technique (see the video accompanying the paper<sup>1</sup>), which involves creating a unified central fat pad that can be transposed over the anterior maxilla. This approach fails to alter the medial portions of the lid-cheek junction that the authors suggest may look unnatural or may be inconsistent with youthful beauty ideals. Furthermore, anterior lamellar tightening via direct skin excision or laser resurfacing can serve as an adjunct to improve skin topography.

If effacement of the nasojugal fold is one of the ultimate goals of lower eyelid surgery, I would like to see future studies go beyond the somewhat qualitative assessments used to grade this in the current study, and incorporate more objective measurements. One such modality would include 3-dimensional photography, which offers a means to accurately study the surface topography in this region. Jelks and I have previously reported the use of the 3D imaging to document changes in the tear trough following fat injections.<sup>2,3</sup> As reported in our studies and those of others, the information obtained by 3D photography is far greater than that of traditional 2D photographs. As 3D cameras and software become less costly, I suspect this technology will become routine in clinical practice to help guide patient care and better understand outcomes.

In summary, I very much enjoyed reading this article, and found the authors' suggestion of a "clinical" tear trough to be quite innovative. To date there still remains

a lack of consensus on what constitutes the true anatomic tear trough. For instance, Haddock et al<sup>4</sup> suggested a unique description of the tear trough as being a superficial subcutaneous anatomic feature, located at the cleft between the palpebral and orbital portions of the orbicularis oculi muscle. The authors of this study offer a shift in our thinking, emphasizing the illusion of the tear trough, rather than its anatomic definition. I am certainly in agreement with the authors that we should consider a *clinical tear trough*, which represents "a confluence of light and shadows ... and is related to several underlying anatomic factors, whilst being solely dependent upon none of them."<sup>1</sup>

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